

05-08-09

BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF HAWAII

----- In the Matter of -----	)	PUC Docket No. 2008-0273
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	)	
PUBLIC UTILITIES COMMISSION	)	
	)	
	)	
Instituting a Proceeding to Investigate the	)	
Implementation of Feed-in Tariffs	)	
_____	)	

DATA AND INFORMATION SUBMITTAL  
OF  
HAWAII RENEWABLE ENERGY ALLIANCE  
AND  
CERTIFICATE OF SERVICE

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**HAWAII RENEWABLE ENERGY ALLIANCE**

**I. INTRODUCTION**

The Hawaii Public Utilities Commission ("Commission"), by its Order filed on October 24, 2008, opened the instant docket, referred to hereafter as the "FiT" docket. The Commission, by its Order filed on November 28, 2008, granted the November 13, 2008 motion of Hawaii Renewable Energy Alliance ("HREA") to intervene in the FiT docket. On January 6, 2009, the Commission issued a Protective Order ("Protective Order") regarding this docket. Per the Commission's Order filed on April 27, 2009, included herein is HREA's Submittal of Data and Information on certain issues as stated in the FiT docket. Specifically, HREA submits herein its preliminary proposal for FiT payment rates for wind projects, including supporting data and information on recommended wind project sizes and by the Hawaiian Electric Company ("HECO") Companies<sup>1</sup> service areas. This includes the islands of Oahu, Maui, Molokai, Lanai and Hawaii.

HREA would like to note the following with respect to our data and information submittal:

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<sup>1</sup> The HECO Companies are Hawaiian Electric Company, Inc., Hawaii Electric Light Company, Inc., and Maui Electric Company, Ltd.

1. Brief Discussion of Alternative FiT Payment Rate Methodologies. HREA observes that there are at least two alternative FiT payment rate methodologies. By methodology, HREA means a general approach by which theoretical and empirical data and information can be used to propose FiT payment rates. We have identified two specific approaches that are best characterized by the initial source of data and information, i.e., Non-Hawaii vs. Hawaii. These two approaches are described below.

a. Non-Hawaii-based. In this methodology, detailed data and information from wind projects on the U.S. mainland, Europe or other wind project locations are analyzed to establish "generic" costs for wind projects of various sizes. These estimates, in turn, are adapted to Hawaii to account for the differences in installed costs (including differing land or site acquisition costs), operating and maintenance costs, performance and anticipated developer profits. There can also be alternative business models, which in turn, may be related to differences in government incentives in Hawaii, such as tax credits. In some cases, there may be relevant studies that summarize wind or other renewable projects<sup>2</sup>. If so, this may facilitate the accumulation and analysis of the data and information from existing projects. Either way, a certain amount of judgment is required to adapt the generic data and information to Hawaii. For example, it may not be as simple as applying an "adder" to such cost data to provide a realistic estimate of the costs for similar projects in Hawaii. However, it may be realistic to conclude, based upon empirical evidence, that in general the cost of shipping a U. S. manufactured wind turbine to Hawaii is 30% greater than shipping to other U.S. mainland locations, labor costs in Hawaii are 20% more, etc. HREA believes this approach is viable, if there is a high level of confidence, for example, in a data set from recent projects in California or other states. These data, in turn, could provide a basis for an assessment of what wind

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<sup>2</sup> For example, the USDOE Lawrence Berkeley Laboratory conducted a survey of U. S. wind project costs for 2007. See <http://eetd.lbl.gov/ea/ems/reports/lbnl-275e.pdf>.



projects should cost in 2009 in California, and thus be adapted to produce cost estimates for Hawaii in 2009.

b. Hawaii-based. In this methodology, data and information on existing or planned projects in Hawaii are used as a starting point for the estimates of the FiT payment rates. One obvious advantage of this approach is that existing costs are real and do not have to be adapted from costs in another locations. On the other hand, one obvious disadvantage occurs if there are a limited number or no existing projects in some project sizes of interest in Hawaii, while there may be good data on the mainland. For example, there are good data on the costs of existing windfarms in Hawaii and potential windfarms that are under development. On the other hand, there are limited data on smaller projects. This shortcoming can be overcome to a degree if there are pending bonafide offers to review.

As with the Non-Hawaii-based methodology, future costs must be estimated given current trends in wind turbine costs, performance and anticipated business models, economic conditions and other factors. That said, HREA has decided to employ the Hawaii-based approach, as we believe we have relevant data and information on existing and planned projects that can be assessed to provide a preliminary wind FiT payment proposal which is discussed below.

2. Qualitative Discussion of HREA's Preliminary FiT Payment Rate Proposal. In this section, we discuss qualitatively the application of the Hawaii-based methodology, including the assumptions we have made regarding the estimation of project costs, performance and the business models. In the case of the latter, we say "models," as there are at least two potential business models that are related to the size of the projects. For the purpose of our proposal, we use the following project size breakdown: small (up to 100 kW), intermediate (above 100 kW to 1 MW), and large (above 1 MW to 20 MW). The details of our approach are as follows:

a. Project Cost Assumptions. HREA has prepared detailed wind project costs estimates using the following installed system cost breakdown for each of the wind project sizes described above and based on specific wind turbine designs we believe to be most appropriate for Hawaii:

- 1) Development (permitting, site access (i.e., land and site acquisition), resource assessment, community outreach)
- 2) Engineering (soil analysis, foundation design, interconnection analysis and design)
- 3) Equipment (wind turbine, tower, balance of system components, shipping)
- 4) Construction (labor, materials, equipment rental) and commissioning (checkout, blessing)
- 5) Total Installed Costs (sum of 1 to 4)

Note: these project costs were estimated considering the following interconnection requirements by project size:

- 1) Smaller projects (100 kW and under) will be restricted at the circuit level to no more than 15% of the distribution feed circuit capacity, and interconnection requirements studies ("IRSs") and utility monitoring and/or control will not required.
- 2) Intermediate projects (above 100 kW to 1 MW) will be one turbine or a cluster of turbines with no utility monitoring and control, and IRSs or ancillary services will not be required. Note: we assume the utility will bear the cost of IRS and ancillary services, if required.
- 3) Large projects (1 MW to 20 MW) will meet existing performance standards and fault-ride through capability with utility monitoring and

control, but no ancillary services. The developers would bear the costs of the IRSs and interconnection. Note: we assume ancillary services could be provided as an adder to the FiT rate or could be provided by the utility.

b. Project Performance Assumptions. HREA has estimated the performance based on a Class III wind resource for small projects of 10 kW and under, based on wind measurements at 10 meters. For projects greater than 10kW up to 750kW, a Class IV wind resource regime is assumed based on wind measurements at 10 meters, which is approximately an average annual windspeed of 12 mph. For large projects of 1.5MW to 20MW, a Class III wind resource regime is assumed based on wind measurements at 50 meters. In all cases, wind turbine annual energy outputs are based on the expected outputs at the turbine's actual hub height. For example, a small turbine tower height might be 15 meters, which is basically the turbine hub height. In addition, the turbine performance is based on standard atmospheric conditions at sea level and a Raleigh wind speed distribution, according to performance standards established by the American Wind Energy Association.

c. Business Model and Financial Assumptions. HREA assumes the two following business models:

- 1) Small Projects up to 10 kW. For these projects, HREA assumes that they will be primarily installed in residential applications by a customer of the HECO Companies. The customer will purchase the system and take both the federal investment tax credit (30%) and the state renewable energy technology income tax credit ("RETITC") of 20%, subject to a \$1,500 CAP on residential projects. In addition we assume:
  - A payback period of 5 years: The rationale for this is a customer is not likely to purchase a small wind turbine if a longer payback



period is required. This is based on evidence the average period of home ownership is only approximately 6 years;<sup>3</sup>

- A proposed FiT term of 10 years: The rationale for the shorter term is based in part on the payback period assumption, but also that the design life of smaller wind turbines is typically 20 years;
- Reasonable Rate of Return on Investment: The estimated total installed costs will allow the Energy Service Provider ("ESP"), i.e., installer, to achieve its desired after-tax Internal Rate of Return ("IRR"); and
- Extension of Term: The customer will have an option to extend the FiT term by 5 years, if desired.

2) All Other Projects (greater than 10 kW to 20 MW). For these projects, HREA assumes that they will be developed by commercial wind project developers who must generate a specific rate of return for their investors. The investors will provide financing for the project that will be able to monetize the federal investment tax credit (30%), but NOT the RETITC. In addition we assume:

- A FiT term of 20 years: This will be required to achieve the after-tax IRR required by the investor, and
- Extension of Term: The owner/operator will have an option to extend the FiT term by 5 years, if desired.

In addition, the following financial assumptions apply to the estimation of all preliminary proposed FiT payment rates for wind projects:

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<sup>3</sup> Lawrence Yun, NAR Vice President of Research and Senior Economist, *Economic Update*, Remarks at the National Association of Realtors 2007 Leadership Summit (August 17-17, 2007) (transcript, page 9).

- for Year 1 in cents/kWh, and subsequent year payments will be escalated at 3% per annum through the FiT term period;
- no ancillary services, such as storage, are included in the proposed FiT payment rates;
- the federal investment tax credit will be available for projects initiated by the end of the year 2016; and
- are based on detailed installed costs for the islands of Maui, Hawaii and Oahu, which are assumed to be the same, and adjusted as follows for Molokai (3 cents/kWh more) and Lanai (4 cents/kWh more).

## II. HREA'S PRELIMINARY WIND FIT PAYMENT RATE PROPOSAL

Based upon the foregoing, HREA is proposing FiT payment rates for small, intermediate and large wind projects for the islands of Oahu, Hawaii, Maui, Molokai and Lanai. These FiT payment rates are supported by data and information contained in Exhibit "A" attached hereto. In summary, HREA's FiT payment rate proposals are as following:

Hawaii, Maui and Oahu	¢/kWh
≤ 10 kW	47.0
> 10 kW ≤ 50 kW	29.0
> 50 kW ≤ 100 kW	28.0
> 100 kW < 250 kW	29.0
≥ 250 kW ≤ 500kW	28.0
> 500 kW ≤ 1 MW	27.0
1 MW ≤ 4.5 MW	28.0
4.5 MW ≤ 6.0 MW	22.0
6.0 MW ≤ 20.0 MW	21.0

Lanai	¢/kWh
≤ 10 kW	51.0
> 10 kW ≤ 50 kW	33.0
> 50 kW ≤ 100 kW	32.0
> 100 kW < 250 kW	33.0
≥ 250 kW ≤ 500kW	32.0
> 500 kW ≤ 1 MW	31.0
1 MW ≤ 4.5 MW	32.0
4.5 MW ≤ 6.0 MW	26.0
6.0 MW ≤ 20.0 MW	25.0



<b>Molokai</b>	<b>¢/kWh</b>
≤ 10 kW	50.0
> 10 kW ≤ 50 kW	32.0
> 50 kW ≤ 100 kW	31.0
> 100 kW < 250 kW	32.0
≥ 250 kW ≤ 500kW	31.0
> 500 kW ≤ 1 MW	30.0
1 MW ≤ 4.5 MW	31.0
4.5 MW ≤ 6.0 MW	25.0
6.0 MW ≤ 20.0 MW	24.0

#### **Preliminary Island-to-Island Pricing Adjustments**

The preliminary FiT rate is the same for Hawaii, Maui and Oahu

Molokai = 3.0 cents/kWh more than the Hawaii, Maui and Oahu rate

Lanai = 4.0 cents/kWh more than the Hawaii, Maui and Oahu rate

The supporting data and information for the foregoing FiT payment rates are set forth in Exhibit "A" attached hereto and they contain confidential information including trade secrets, confidential research, development, commercial and financial information as they contain certain cost data and assumptions for existing and proposed wind projects in Hawaii developed on a confidential basis by certain of HREA's members and associates which are energy project developers. The disclosure of this confidential information to actual and potential competitors of HREA's members and associates (and even to certain of HREA's other members and associates) would result in competitive harm to the interests of those members and associates of HREA which provided this information. Therefore, HREA is submitting these attachments on a **confidential basis** to the **Commission only** subject to the Protective Order.

We reserve the rights to provide the Commission with updated data and information as appropriate. We also stand ready to provide the Commission with additional data and information upon request.

We stand by our preliminary proposal as worthy of consideration by the Commission as fair to the owner/developer, i.e., the proposed payment rates will both allow the ESP/developer to earn a fair rate of return, and encourage overall rapid deployment of wind projects in Hawaii.

DATED: May 8, 2009, Honolulu, Hawaii

A handwritten signature in cursive script, appearing to read "Warren S. Bollmeier II", written over a horizontal line.

Warren S. Bollmeier II, President  
HAWAII RENEWABLE ENERGY ALLIANCE

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CERTIFICATE OF SERVICE

I hereby certify the foregoing HREA Submittal of Data and Information, without confidential attachments, was served on May 8, 2009, by Hand Delivery or by U.S. mail, first class, postage prepaid, to each party as follows:

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